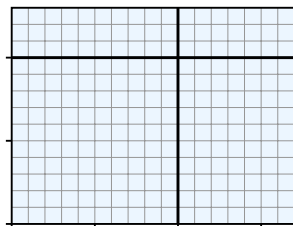


AREA MODEL — MULTIPLICATION

Mr. Merrick · September 30, 2025

Part A — Draw splits on the grids, label each region, and find the product.

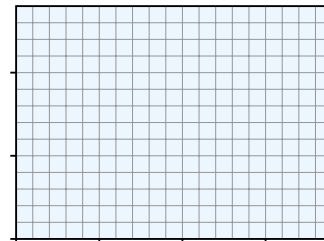
1) 17×13



Worked example. Split shown: $(10 + 7)(10 + 3)$.

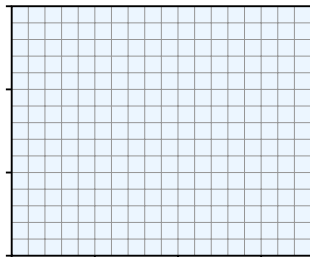
$$\begin{aligned}(17 \times 13) &= (10 + 7)(10 + 3) \\ &= 10 \times 10 + 10 \times 3 + 7 \times 10 + 7 \times 3 \\ &= 100 + 30 + 70 + 21 \\ &= \boxed{221}\end{aligned}$$

2) 19×14



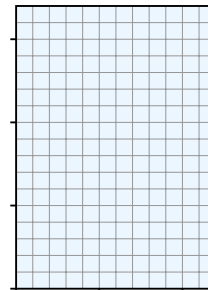
$$\begin{aligned}19 \times 14 &= (10 + 9)(10 + 4) \\ &= \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \\ &= \underline{\hspace{2cm}}\end{aligned}$$

3) 18×15



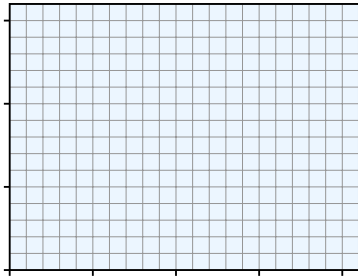
$$\begin{aligned}18 \times 15 &= (10 + 8)(10 + 5) \\ &= \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \\ &= \underline{\hspace{2cm}}\end{aligned}$$

4) 12×17



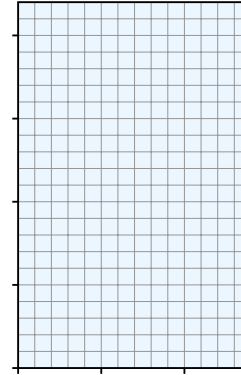
$$\begin{aligned}12 \times 17 &= (10 + 2)(10 + 7) \\ &= \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \\ &= \underline{\hspace{2cm}}\end{aligned}$$

5) 21×16



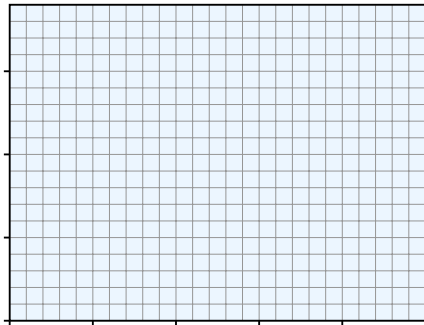
$$\begin{aligned} 21 \times 16 &= (20 + 1)(10 + 6) \\ &= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

6) 14×22



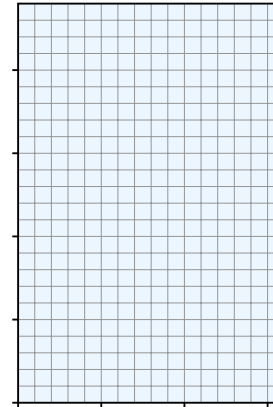
$$\begin{aligned} 14 \times 22 &= (10 + 4)(20 + 2) \\ &= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

7) 25×19



$$\begin{aligned} 25 \times 19 &= (20 + 5)(10 + 9) \\ &= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

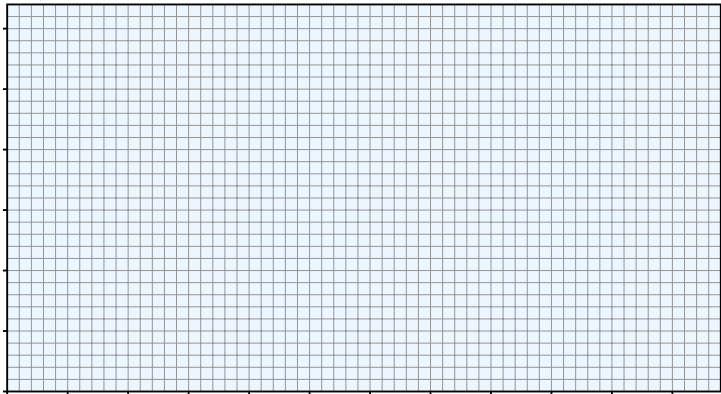
8) 16×24



$$\begin{aligned} 16 \times 24 &= (10 + 6)(20 + 4) \\ &= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

Part B — Use flexible “breaks”, then expand and compute.

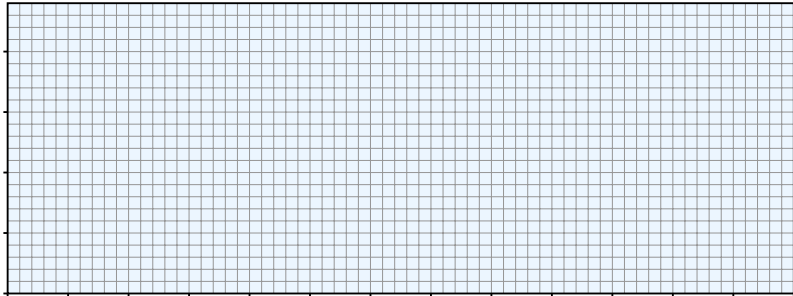
1) 59×32



Example break: $(50 + 9)(30 + 2)$. Draw matching split lines.

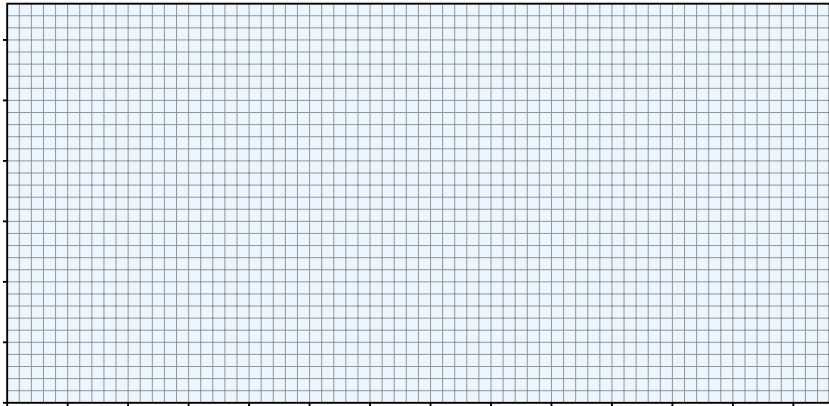
$$(50 + 9)(30 + 2) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$
$$= \underline{\hspace{1cm}}$$

2) 65×24



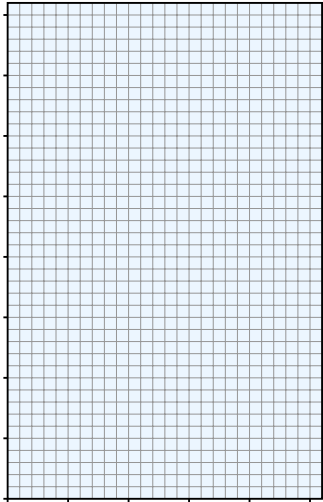
$$(30 + 35)(20 + 4) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$
$$= \underline{\hspace{1cm}}$$

3) 68×33



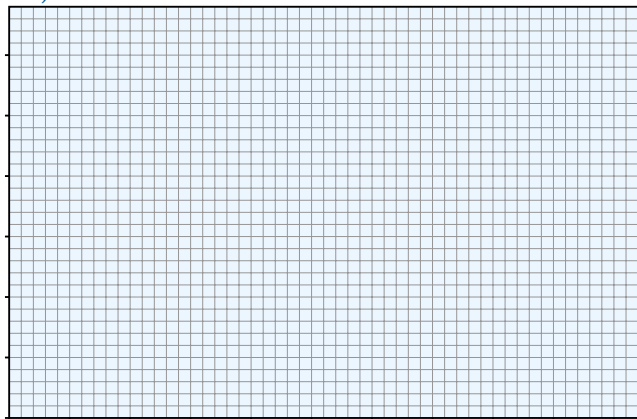
$$(60 + 8)(30 + 3) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$
$$= \underline{\hspace{1cm}}$$

4) 26×41



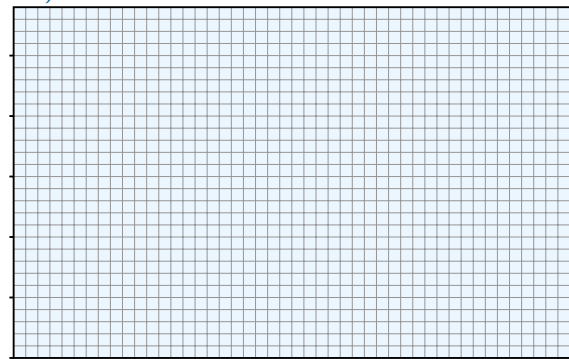
$$(20 + 6)(40 + 1) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$
$$= \underline{\hspace{1cm}}$$

5) 52×34



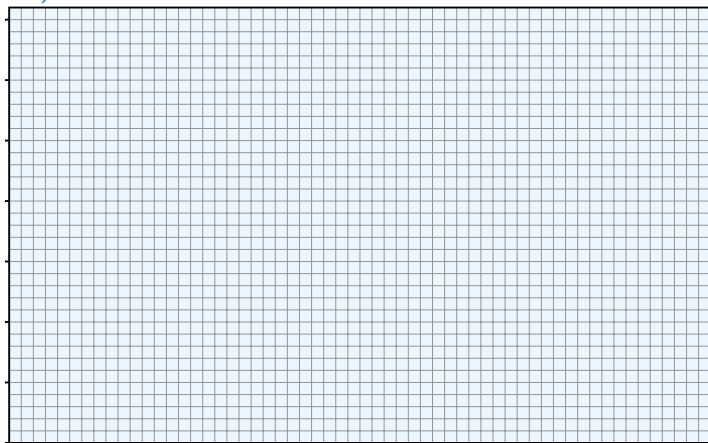
$$(50 + 2)(30 + 4) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \\ = \underline{\hspace{2cm}}$$

6) 47×29



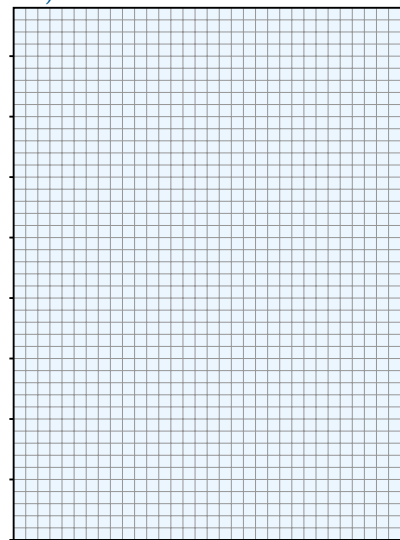
$$(40 + 7)(20 + 9) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \\ = \underline{\hspace{2cm}}$$

7) 58×36



$$(50 + 8)(30 + 6) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \\ = \underline{\hspace{2cm}}$$

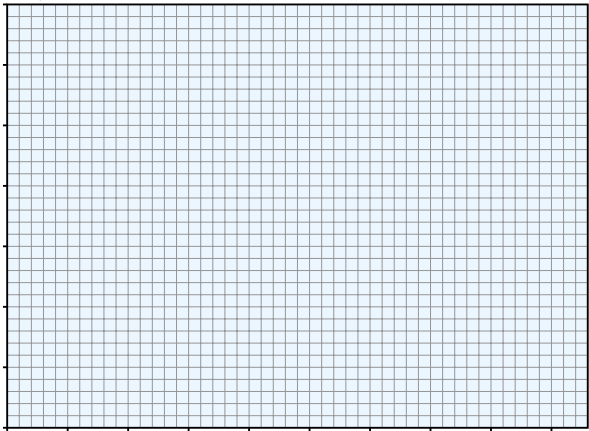
8) 33×44



$$(30 + 3)(40 + 4) = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \\ = \underline{\hspace{2cm}}$$

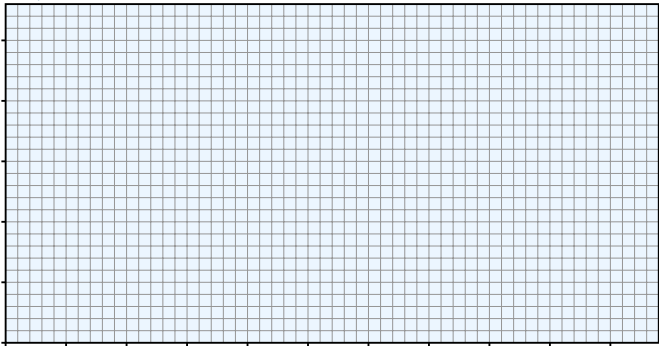
Part C — Choose your own breaks, then expand and compute.

1) 48×35



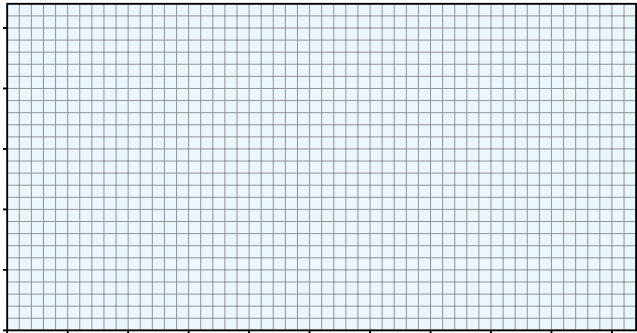
$$\begin{aligned} 48 \times 35 &= (\text{---} + \text{---})(\text{---} + \text{---}) \\ &= \text{---} + \text{---} + \text{---} + \text{---} \\ &= \text{---} \end{aligned}$$

2) 54×28



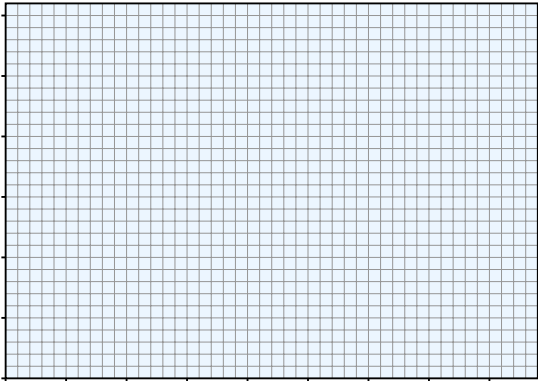
$$\begin{aligned} 54 \times 28 &= (\text{---} + \text{---})(\text{---} + \text{---}) \\ &= \text{---} + \text{---} + \text{---} + \text{---} \\ &= \text{---} \end{aligned}$$

3) 52×27



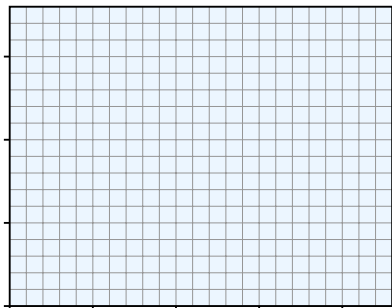
$$\begin{aligned} 52 \times 27 &= (\text{---} + \text{---})(\text{---} + \text{---}) \\ &= \text{---} + \text{---} + \text{---} + \text{---} \\ &= \text{---} \end{aligned}$$

4) 44×31



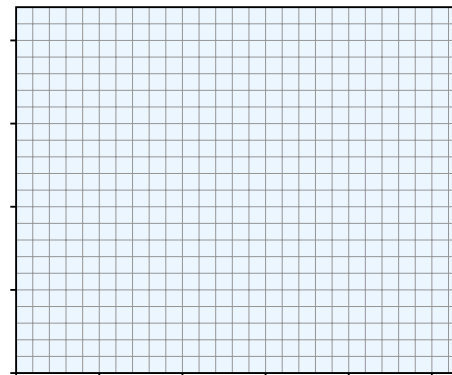
$$\begin{aligned} 44 \times 31 &= (\text{---} + \text{---})(\text{---} + \text{---}) \\ &= \text{---} + \text{---} + \text{---} + \text{---} \\ &= \text{---} \end{aligned}$$

5) 23×18



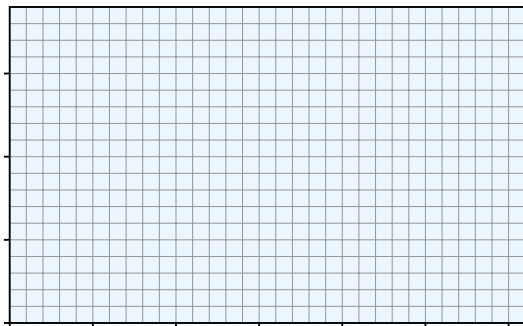
$$\begin{aligned} 23 \times 18 &= (\text{---} + \text{---})(\text{---} + \text{---}) \\ &= \text{---} + \text{---} + \text{---} + \text{---} \\ &= \text{---} \end{aligned}$$

6) 27×22



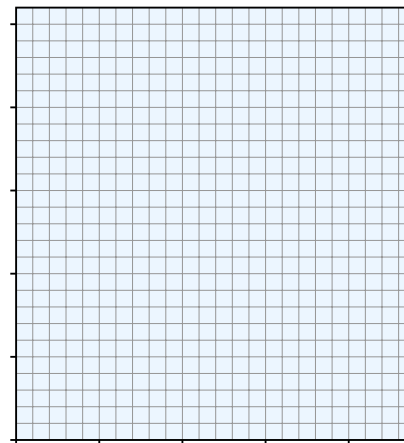
$$\begin{aligned} 27 \times 22 &= (\text{---} + \text{---})(\text{---} + \text{---}) \\ &= \text{---} + \text{---} + \text{---} + \text{---} \\ &= \text{---} \end{aligned}$$

7) 31×19



$$\begin{aligned} 31 \times 19 &= (\text{---} + \text{---})(\text{---} + \text{---}) \\ &= \text{---} + \text{---} + \text{---} + \text{---} \\ &= \text{---} \end{aligned}$$

8) 24×26



$$\begin{aligned} 24 \times 26 &= (\text{---} + \text{---})(\text{---} + \text{---}) \\ &= \text{---} + \text{---} + \text{---} + \text{---} \\ &= \text{---} \end{aligned}$$

Teacher Key — Product Totals

Part A

1) $17 \times 13 = 221$

2) $19 \times 14 = 266$

3) $18 \times 15 = 270$

4) $12 \times 17 = 204$

5) $21 \times 16 = 336$

6) $14 \times 22 = 308$

7) $25 \times 19 = 475$

8) $16 \times 24 = 384$

Part C (Page 1)

1) $48 \times 35 = 1680$

2) $54 \times 28 = 1512$

3) $52 \times 27 = 1404$

4) $44 \times 31 = 1364$

Part B

1) $59 \times 32 = 1888$

2) $65 \times 24 = 1560$

3) $68 \times 33 = 2244$

4) $26 \times 41 = 1066$

5) $52 \times 34 = 1768$

6) $47 \times 29 = 1363$

7) $58 \times 36 = 2088$

8) $33 \times 44 = 1452$

Part C (Page 2)

5) $23 \times 18 = 414$

6) $27 \times 22 = 594$

7) $31 \times 19 = 589$

8) $24 \times 26 = 624$